Original Article

A Cross Sectional Study Of Thalassemia In Ahmedabad City, Gujarat. (Hospital based)

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Abstract

Thalassemia is a quantitative problem of too few globins synthesized, whereas sickle-cell anemia (a hemoglobinopathy) is a qualitative problem of synthesis of an incorrectly functioning globin. The present study was undertaken with objective to study the occurrence and socio-demographic profile of thalassemia cases. There were 223 patients (55 from Municipal Corporation Hospitals & 168 from New civil hospital, Ahmedabad) admitted in the hospitals during January 2006 to March 2009.Majority of patients were males, from 1-5 year age group and from Hindu community. Majority of patients from corporation hospitals had more frequency of blood transfusion compared to government hospital. Thalassemia major cases were higher compared to minor.
Key words: Thalassemia type, Sociodemographic profile, Blood requirement

Introduction

Thalassemia (from Greek, thalassa, haima, blood; British spelling, "thalassemia") is an inherited autosomal recessive blood disease. In thalassemia, the genetic defect results in reduced rate of synthesis of one of the globin chains that make up hemoglobin. There are an estimated 60-80 million people in the world who carry the beta thalassemia trait alone[(1)]. Thalassemia syndromes are a heterogeneous group of single gene disorders, inherited in an autosomal recessive manner, prevalent in certain parts of the world [(2)]. BETA-thalassemia is the most common single gene disorder in our country[(3)]. In fact beta-thalassemia has emerged as a huge public health problem worldwide[(4)]. Increase in survival of patients with this disorder has led to more prevalence of this disease. Reportedly, there are about 240 million carriers of b-thalassemia worldwide, and in India alone, the number is approximately 30 million with a mean prevalence of 3.3%[(5,6,7)]. But among certain communities and religions like Punjabis, Sindhis, Bengalis, Jams and Muslims, the incidence of beta-thalassemic trait ranges between 8-15 %[(8)]. It is estimated that there are about 65,000-67,000 b-thalassemia patients in our country with around 9,000-10,000 cases being added every year [(1,5,6,7)]. The carrier rate for b-thalassemia gene varies from 1 to 3% in Southern India to 3% to 15% in Northern India. Certain communities in India, such as Sindhis and Punjabis from Northern India, Bhanushali's, Kutchis, Lohana's from Gujarat, Mahar's, Neobuddhist's, Koli's and Agri's from Maharashtra, & Gowda's and Lingayat's from Karnataka etc. have a higher carrier rate[(6,9)].

Genetic prevalence

Thalassemia has an autosomal recessive pattern of inheritance and β thalassemia is often inherited in an autosomal recessive fashion although this is not always the case. For the autosomal recessive forms of the disease both parents must be carriers in order for a child to be affected. If both parents carry a hemoglobinopathy trait, there is a 25% chance with each pregnancy for an affected child. Genetic counseling and genetic testing is recommended for families that carry a thalassemia trait.

Countries such as India, Pakistan and Iran are seeing a large increase of thalassemia patients due to lack of genetic counseling and screening. Generally, thalassemia is prevalent in populations that evolved in humid climates where malaria was endemic. It affects all races, as thalassemia protected these people from malaria due to the blood cells' easy degradation. There is growing concern that thalassemia may become a very serious problem in the next 50 years, one that will burden the world's blood bank supplies and the health system in general[(10)]. The most effective approach to reduce the burden on the society

and reduce the disease incidence is through implementation of a carrier-screening programme, offering genetic counseling, prenatal diagnosis and selective termination of affected fetus[3]. Present study was undertaken at two different institutions to find out occurrence of disease, its severity and management in two different sectors hospital of Ahmedabad.

Aims

To find out occurrence of thalassemia major/minor in Pediatrics wards.
To describe the socio-demographic profile of the patients.
To know the complication among patients.
Measures to prevent and health education to create awareness in general populations.

Method

A cross- sectional hospital record based study was carried out in two institutions one was Municipal corporation hospitals which include two hospitals V. S. General and L. G. Hospital and second one was Civil hospital run by Governement of Gujarat. All patients of thalassemia who were admitted in pediatric ward of respective hospitals during January 2006 to March 2009 were included in the study. All the information regarding their socio-demographic profile and their thalassemic status were collected in pre designed and pre tested standard proforma from the hospital records. The study was conducted in the year 2009. After taking permission from institutional heads, the record section was contacted and all relevant information collected.
Data was collected and compiled in excel sheet and analyzed with appropriate statistical methods.

Results

Total 223 patients were admitted to the pediatric wards of both hospitals during Jan 2006 to March 2009, out of them 55(24.7%) were from Ahmedabad Municipal corporation hospitals while168 (75.3%) were from the new civil hospital, Ahmedabad.

Table 1: sociodemographic profile of patients

Sociodemo-graphic characteristic	Municipal corporation	Govt. hospital	Total
Male	37(67%)	118(70.2%)	155(69.5%)
Female	18(33%)	50(29.8%)	68(30.5%)
Age <1	9(16%)	37(22%)	46(20.6%)
Age 1-5	34(62%)	75(44.6%)	109(48.9%)
Age 6-9	10(18%)	33(19.6%)	43(19.3%)
Age 10 yrs & more	2(4%)	23(13.8%)	25(11.2%)

Table 1a: Sociodemographic profile of patients (Contd.)

Sociodemographic characteristic Religion	Municipal corporation	Govt. hospital	Total
Hindu	42(76.4%)	124(73.8%)	166(74.4%)
Muslim	13(23.6%)	44(26.2%)	57(25.6%)
Total	55(24.7%)	168(75.3%)	223(100%)

Figures in parenthesis show percentage.

In both govt. as well as Municipal corporation hospitals most of the thalassemic patients were male, being 70.2% and 67% respectively. This difference was found statistically insignificant(X^2=0.06; P>0.05). Majority 34(62%) of the patients attending Municipal corporation hospitals and 75(44.6%) of the patients attending Govt. hospitals were from 1-5 years of age group. The difference was found to be statistically insignificant (X^2=6.92; P>0.05). According to religion wise distribution, majority42 (76.4%) & 124(73.8%) were Hindu from both the

Municipal corporation & Government hospital respectively. (Table 1, 1a)

Table 2: Particulars of blood requirement among patients

Particulars of blood requirement	Municipal corporation	Govt. hospital
Frequency of blood requirement		
< 1month	37(67.3)	20(11.9)
>1 month	18(32.7)	148(88.1)
Parents/relative ever donated blood	5.4±3.8	76(45.2%)
Average duration of treatment (yrs)	11.2±4.8	

Table 2 revealed that majority 37(67.3%) from municipal corporation hospitals had blood requirement frequency of less than one month, while majority 148(88.1%) from Govt. hospitals had blood requirement frequency of more than one month. This difference was statistically highly significant(X^2=8.37; P<0.001). Significantly (Z=3.85; P<0.01) higher proportion of parents 40(72.7%) attending the municipal corporation hospitals had donated blood for their children as compared to 76(45.2%) of the parents/relatives attending govt, hospital. the difference between average duration of treatment between both the sectors were highly significant (Z=8.16, P<0.001)

In Table-3, Out of total 223 patients, majority 179(80.3%) had thalassemia major while only 8(3.6%) had thalassemia minor. Difference between the thalassemia & both the sectors hospitals were found statistically insignificant. (X^2=3.06; P>0.05)

In Table-4, Out of total 223 patients, 32(14.4%) had congestive cardiac failure including 6(11%) from corporation hospital & 26(15.5%) from Govt. hospital. This difference was not statistically significant(X^2=0.38; P>0.05).

Table 3: Thalassemia Type-wise distribution:

Thalassemia	Municipal corporation	Govt. hospital	Total
Major	40(73%)	139(82.7%)	179(80.3%)
Intermediate	13(23%)	23(13.7%)	36(16.1%)
Minor	2(4%)	6(3.6%)	8(3.6%)
Total	55(24.7%)	168(75.3%)	223(100%)

Table 4: distribution based on congestive cardiac failure presentation in the thalassemic patients:

CCF	Municipal corporation	Govt. hospital	Total
Present	6(11%)	26(15.5%)	32(14.3%)
Absent	49(89%)	142(84.5%)	191(85.7%)
Total	55(24.7%)	168(75.3%)	223(100%)

Discussion:

The numbers of affected children were more at Govt. institution compared to Municipal corporation hospitals. This might be due to large catchment areas of Govt. hospital Ahmadabad which covers the population of all Gujarat and also serves as referral center of other neighbor state compared to Municipal corporation hospitals which covers only Ahmadabad urban areas.

In both the institutions, proportion of male patients was higher more than twice. Relatively higher proportion of male patients 67% at corporation hospitals & 70.2% at Government hospitals. This may be explained by the deep-rooted gender bias among the parents of these chronically ill children who seek medical care and are ready to spend more for their male children only. The finding of male preponderance was observed in other studies as well; Bhaswati et al[11], Harsha et al[7] and Sur et al[12] reported65.5%, 56% and 62.1% of male patients, respectively. Proportion of the affected children in the age group 1-5 years was found to be more in the

both the municipal corporation & Govt. hospital. The possible reasons may be that the study was conducted in the pediatric wards of the institutions.

Higher frequency of blood requirement for the affected children was observed in Municipal corporation hospitals as compared to those attending the govt. institution. This might be due to the fact that parents attending the Municipal corporation hospitals were literate and also made aware and more alert about the symptoms and sings of their children as well as importance of their regular follow up including Hb estimation by ongoing regular counseling services and moreover catchment areas of municipal hospitals covers only Ahmedabad urban areas so parents could easily access the centers more frequently for treatment. in contrast Govt. hospital whose benefiaries were from remote areas ,poor accessibility and most of the illiterate parents were not aware of the value of regular follow-up and would attend the facility only when severe signs and symptoms developed. Due to the same reasons higher proportion of parents (72.7%) attending the Municipal hospitals had donated blood for their affected children compared to those in govt, hospital (45.2%). Average duration of treatment of thalassemia patients was higher in the Municipal hospitals as compared to Govt, hospital, which might be attributed all of these reasons.

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